Turner, B.L. 2011. Taxonomy of the papillose *Euphorbia* [Tithymalus] *longecornuta* complex (Euphorbiaceae) of northern Mexico. Phytoneuron 2011-14: 1–7. Mailed 7 March 2011

# TAXONOMY OF THE PAPILLOSE *EUPHORBIA* [TITHYMALUS] *LONGECORNUTA* COMPLEX (EUPHORBIACEAE) OF NORTHERN MEXICO

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## ABSTRACT

*Euphorbia longecornuta* is the earliest (first proposed in 1890) of four species in northern Mexico, all belonging to the Tithymalus group, which possess papillose leaves, stems, or cyathia. An additional two species (*E. ivanjohnstonii* and *E. pinkavana*) were subsequently proposed by M.C. Johnston, and a fourth (*E. creberrima*) by the late Rogers McVaugh. The taxonomy of the group is discussed and a key to the taxa presented. **Euphorbia ivanjohnstonii** forma **longifolia** B.L. Turner, forma nov., is proposed and a photograph of the holotype is provided, along with a map showing distributions of the taxa concerned.
**KEY WORDS**: Euphorbiaceae, *Euphorbia, Tithymalus*, Mexico, Coahuila

Identification of miscellaneous plants from northern Mexico has occasioned the present paper, which deals with the four known papillose taxa of northern Mexico (Fig. 1), all belonging to the Tithymalus group of *Euphorbia* sensu lato. Webster (1967), for example, regarded the group as *Euphorbia* subg. *Esula* sect. *Tithymalus*.

**Key to *Euphorbia* species of northern Mexico having papillose vestiture**

1. Middle and upper stem-leaves mostly 0.8–1.3 cm long.

   2. Involucral glands ca 1.0 mm wide; southern Nuevo León ..... **Euphorbia longecornuta**
   2. Involucral glands 0.5–0.8 mm wide; northeastern Coahuila ..... **Euphorbia ivanjohnstonii**

1. Middle and upper leaves 1.5–3.5 cm long.

   3. Stems glabrous; Sierra de la Madera, northwest of Cuatro Cienagas ..... **Euphorbia pinkavana**
   3. Stems papillose, like the leaves.

      4. Involucral glands ca 1.0 mm wide; Durango ..... **Euphorbia creberrima**
      4. Involucral glands 0.4–0.8 mm wide; northern Coahuila
         ..... **Euphorbia ivanjohnstonii** forma **longifolia**

**1. EUPHORBIA CREBERRIMA** McVaugh, Contr. Univ. Michigan Herb. 19: 218. 1993.

McVaugh treated this species in some detail, pointing out its relationship to *Euphorbia furcillata,* but noted that the "epidermal outgrowths in *E. creberrima* [which are lacking in *E. furcillata*] are almost incredibly like those of *Euphorbia ivanjohnstonii.*" Indeed, in habit and foliage it most resembles the forma *longifolia,* as noted in the above key.

**2. EUPHORBIA IVANJOHNSTONII** M.C. Johnston, Wrightia 5: 129. 1975.
*Tithymalus ivanjohnstonii* (M.C. Johnston) Soják, Čas. Nár. Mus., Odd. PYír. 148: 199. 1979[1980].

Johnston (1975) provided an excellent account of this taxon, noting its occurrence in the Sierra del Pinos of northeastern Coahuila and its close relationship to *E. pinkavana*. He neglected, however, to associate the taxon with *E. longecornuta*, perhaps because, in proposing the species, Watson referred to the leaves as glabrous.

**Euphorbia ivanjohnstonii** forma **longifolia B.L. Turner, forma nova** Fig. 2
*Euphorbiae ivanjohnstonii* typicae similis sed differt habitu erectiore tenuiore et laminis foliorum longioribus (1.5–3.0 cm longis vs 0.5–1.5 mm).

**TYPE: MEXICO. Coahuila.** Mpio. Ocampo, ca 63 (air) miles S of the S-most Mex-US border of Big Bend, in Sierra Santa Fe del Pino, Canon del Pino (VACA), on NE facing limestone slope, ca 5 miles above the main ranch, in narrow canyon, 6000 ft, 28° 10' N, 103° 01' W, 12 Oct 1976, *J. Henrickson 15643* [with M. Dillon] (holotype: TEX).

The type specimen was originally identified by both its collector and myself as *Euphorbia ivanjohnstonii* (Fig. 3), which it resembles in vestiture and characters of the cyathia, but it is very different in habit and foliage, being a stiffly erect perennial with linear-oblanceolate leaves. My initial intuition led me to think it might be new, but considering the leaf variation found in related taxa and its occurrence in the Sierra del Pinos, which contains the only populations of *E. ivanjohnstonii*, I suspect it is but a leaf form, hence the above bestowal of rank.

Johnston (1975), in his description of *Euphorbia ivanjohnstonii*, compared his novelty with *E. brachycera* Engelm. Indeed the two taxa were found growing together at the type locality of forma *longifolia* (cf. *Henrickson 15644*, TEX, Fig. 4), but there is not a hint of papillosity in the latter and their flowers are markedly different. Furthermore, none of the numerous specimens of *E. brachcerya* (Fig. 5) on file at LL-TEX possesses a papillose vestiture, although a precious few collections from the trans-Pecos region of Texas (e.g., Presidio Co., Chinati Peak, ca 5200 ft.) produce a vestiture of very short hairs approaching that of *E. mcvaughiana* M.C. Johnston, but not truly papillate.

**3. EUPHORBIA LONGECORNUTA** S. Wats., Proc. Amer. Acad. Arts 18: 161. 1890.

This species is known to me by only two collections, the type (isotype TEX!) and a nearby collection from the Cima de la Sierra de la Marta at 3400 m (*Villarreal 8141*, TEX); the latter was annotated as *Euphorbia pinkavana* by Mark Mayfield in 1998, although he thought it might be a collection of *E. longecornuta* when originally examined (in 1995). Because of its locality, overall gestalt, and papillose stems it is almost certainly a collection of the latter. It differs somewhat from the latter in the shorter "horns" on the involucral glands (ca 0.5 mm long vs 1.0 mm long), but such horns are quite variable among the papillose taxa concerned.

Interestingly, Watson described the type of *Euphorbia longecornuta* as "glabrous and glaucus," no doubt because of a lack of modern optical resolution that readily reveals the minute papillosity found on its foliage and stems. To my knowledge, McVaugh (1993) was the first to point out its relationship to the other papillose taxa, this not mentioned by Johnston (1975) in his treatment of the Chihuahuan taxa.

Finally, it can be noted that *Euphorbia ivanjohnstonii* might be subsumed within the parameters of this taxon without much ado since they are very similar in habit, foliage, and vestiture, differing primarily in the size and shape of their involucral glands, as noted in the above key.

**4. EUPHORBIA PINKAVANA** M.C. Johnston, Wrightia 5: 126. 1975.
*Tithymalus pinkavanus* (M.C. Johnston) Soják, Čas. Nár. Mus., Odd. PYír. 148: 199. 1979[1980].

Johnston (1975) provided an excellent account of this taxon, noting its close relationship with *Euphorbia pinkavana*, but failing to call attention to its relationship with the equally close *E. longecornuta*, as noted in the above.

## ACKNOWLEDGEMENTS

Guy Nesom provided the Latin diagnosis, for which I am grateful. He also read an early draft of the paper, providing helpful suggestions, as did my bosom colleague, Jana Kos. Distribution maps are based upon specimens on file at LL-TEX and those specimens cited in the papers of Johnston (1975) and McVaugh (1993).

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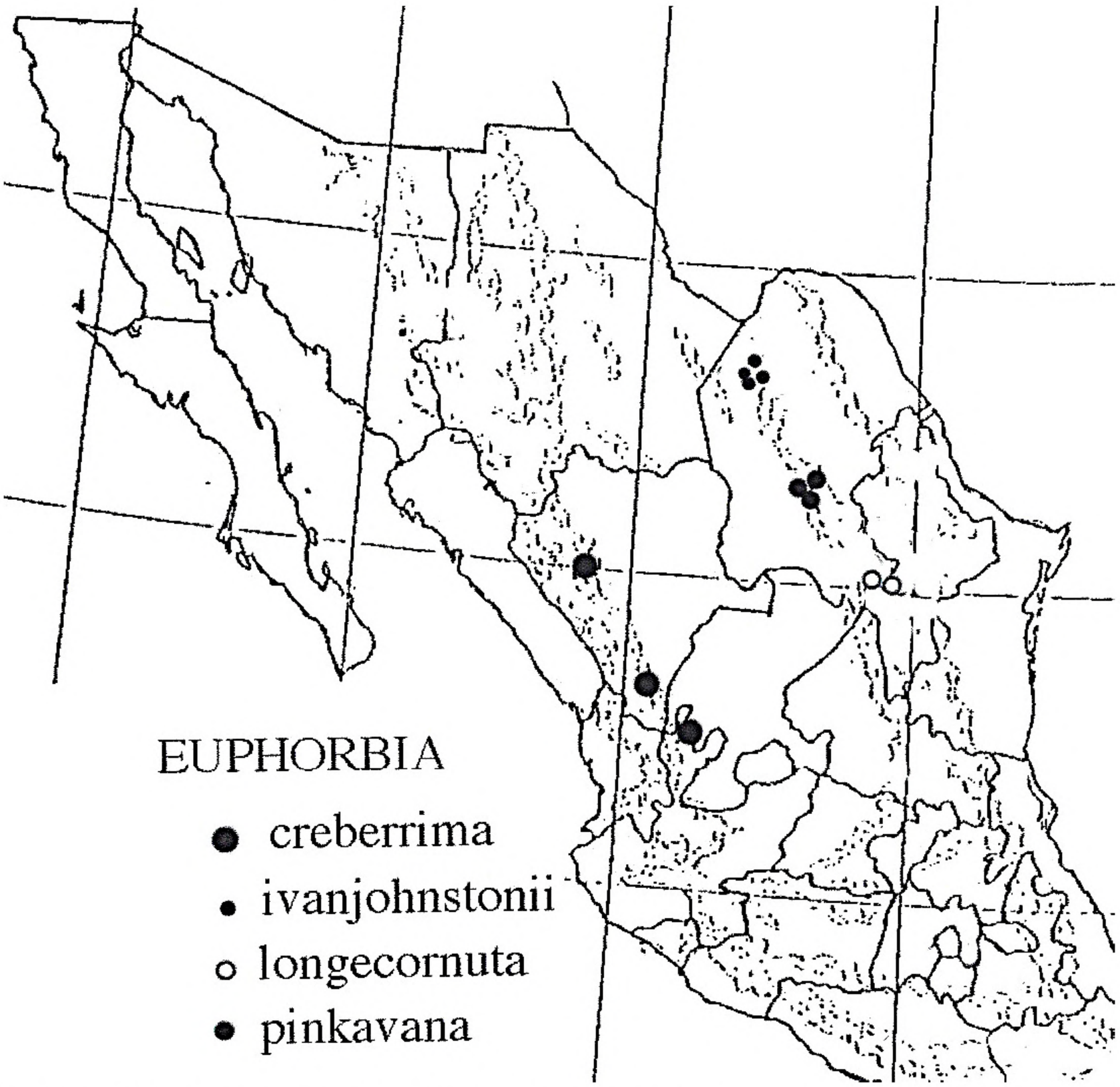


Figure 1. Distribution of papillose *Euphorbia* taxa in Mexico.

UNIVERSITY OF TEXAS HERBARIUM
anthers 10 -12
1.0 mm long
1.75
1.5 mm
1.0 mm
E. ivanjohnstonii f. longifolia
TEX
0 1 2 3 4 5 6 7 8 9 10 cm
copyright reserved
The University of Texas Herbarium (TEX)
Euphorbia ivanjohnstonii (M.C. Johnst.) Sojak
det. B.L. Turner 2007
HOLOTYPE OF: Euphorbia ivanjohnstonii forma longifolia B.L. Turner
2007
California State University, Los Angeles
PLANTS OF MEXICO
Euphorbia ivanjohnstonii - M.C. Johnston
Coahuila, Mexico; ca 63 (air) miles S of the S-most Mex-US border of Big Bend, in Sierra Santa Fe del Pino, Cañon del Pino (Vaca), on N-E facing limestone slope, ca 5 miles above the main ranch, in narrowing canyon; with Agave, Prunus, Juniperus flaccida, Pinus arizonica, Quercus, Fraxinus, etc.
Perennial, fleshy.
6000 ft
October 12, 1976
Near 28° 10' N, 103° 01' W
James Henrickson w/ M. Dillon 15643 6
University of Texas - Austin (LL, TEX)
00418189

Figure 2. *Euphorbia ivanjohnstonii* forma *longifolia* (holotype: TEX).

Treated in 1967 with
lauryl pentachlorphenate!
LUNDELL
HERBARIUM
The University of Texas
AUSTIN, TEXAS
Cite: LL
cyathium
cyathium
cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
LL
The University of Texas Herbarium (TEX)
Euphorbia ivanjohnstonii M.C. Johnston
Det. by B.L. Turner 2011
MEXICO: western Coahuila
End of road from T. Armendaiz north into the Sierra del Pino
Euphorbia (§ Tithymalus) ivanjohnstonii M.C. Johnston sp. nov.
Sierra del Pino: vicinity of La Noria, open valley with scrub oaks and scattered pines.
gravelly bed of arroyo
I. M. Johnston
C. H. Muller
No. 512
Aug. 20-26, 1940
Examined for
Flora Novo-galiciana
University of Texas - Austin (LL, TEX)
00094621

Figure 3. *Euphorbia ivanjohnstonii* (typical form).

UNIVERSITY OF TEXAS HERBARIUM
0 1 2 3 4 5 6 7 8 9 10
cm
copyright reserved
TEX
The University of Texas Herbarium (TEX)
Euphorbia brachycera Engelm.
Det. by B.L. Turner 2011
California State University, Los Angeles
PLANTS OF MEXICO
Euphorbia brachycera Engelm
var gregii (Boiss) M.C Johnston
Coahuila, Mexico; ca 63 (air) miles S of the S-most Mex-US border of Big Bend, in Sierra Santa Fe del Pino, Cañon del Pino (Vaca), on N-E facing limestone slope, ca 5 miles above the main ranch, in narrowing canyon; with Agave, Prunus, Juniperus flaccida, Pinus arizonica, Quercus, Fraxinus, etc.
Perennial.
6000 ft October 12, 1976
Near 28° 10 'N, 103° 01'W
James Henrickson w/ M. Dillon 15644 2
University of Texas - Austin (LL, TEX)
00418139

Figure 4. *Euphorbia brachycera* (growing with *E. ivanjohnstonnii* forma *longifolia*).

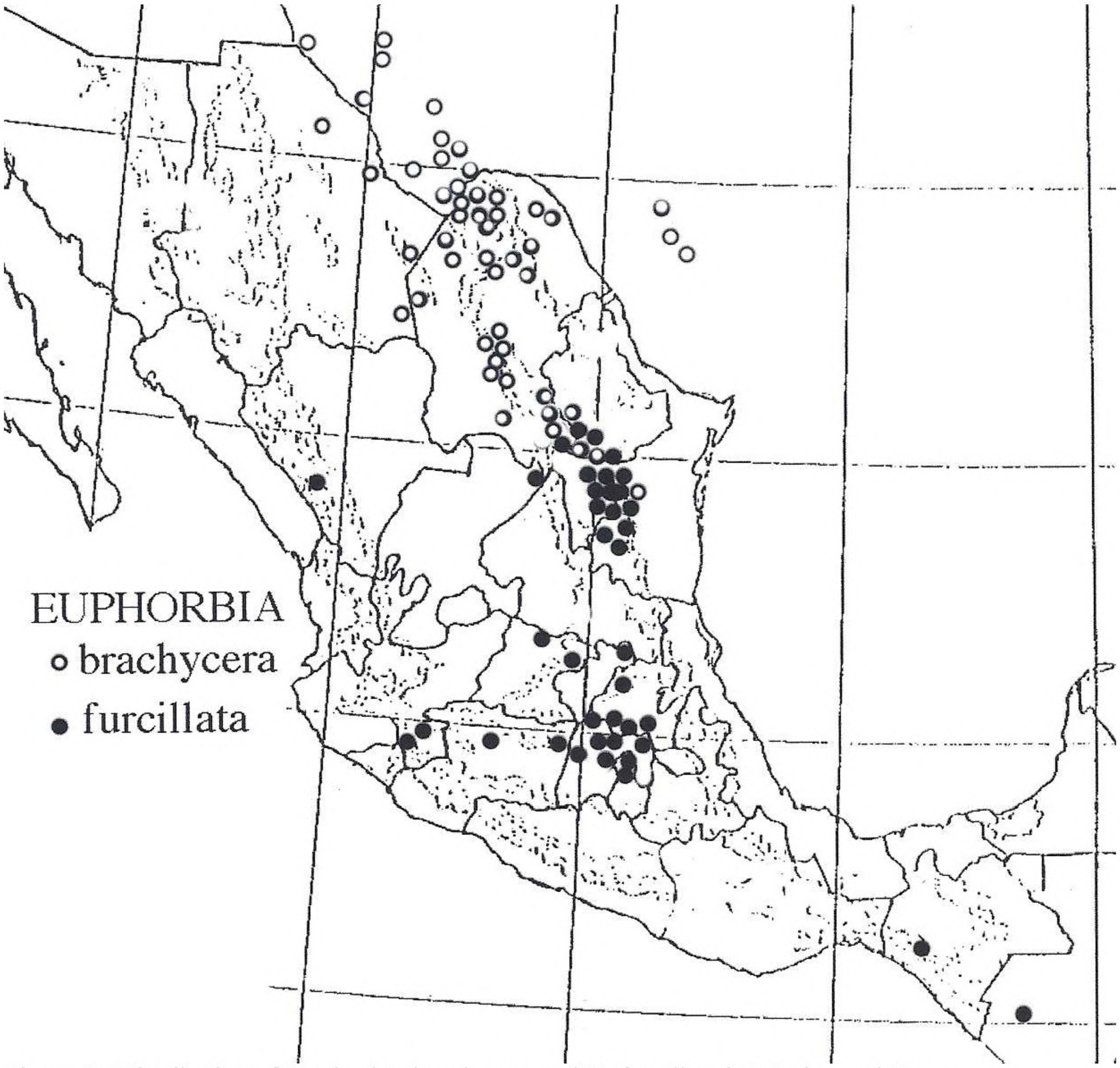


Figure 5. Distribution of *Euphorbia brachycera* and *E. furcillata* in Mexico and Texas.